Clinical Management Guidance for Mild Traumatic Brain Injury – Acute

Non-Deployed Care

TRAUMATIC EVENT
~Concussion Suspected~

1. Perform MACE
2. Confirm mTBI:
   a. ***Injury Event*** *(**blast, fall, motor vehicle collision (MVC), head impact**)*
   AND
   b. ***Alteration of Consciousness*** *(**dazed, confused or loss of consciousness even momentarily**)*

Evaluate for Red Flags[a]
Perform Neuro Exam
CT Scan
Administer ANAM[b]

Are Red Flags[a] present or is CT Scan positive?

Yes → ***Urgent referral to Neurology, Neurosurgery, or Emergency Room as appropriate***

No

[b] **Administer ANAM:** If injury is over 24 hours old and if ANAM is available.

Positive findings on Neuro Exam, ANAM[b], or MACE Score <25 or symptoms from Item VIII?

Yes →

Primary Care Management
1. Manage symptoms[c]
2. Provide Education
3. Profile – 7 days
4. Re-evaluate symptoms (Item VIII) and re-administer ANAM[b] within 7 days
5. Consider Neurology referral if clinically indicated

Continued symptoms or abnormal ANAM on re-evaluation?

Yes → **1. 30 day profile**
2. Go to Sub-Acute CMG

No

No →

Perform Exertional Testing[d]

Positive symptoms with exertional exercise testing[d]?

Yes →
1. Provide Education
2. Profile – 7 days
3. Repeat exertional testing[d] in 24 hours

Positive symptoms on exertional testing[d]?

Yes → Repeat exertional testing[d] & re-evaluate symptoms in 7 days

Any emergent symptoms, persistent symptoms with exertion?

Yes →

No → Reinforce Education
Return to Duty

No → Reinforce Education
Return to Duty

No → Provide Education
Return to Duty

[a] **Red Flags:**
1. Progressively declining level of consciousness
2. Progressive declining neurological exam
3. Pupillary asymmetry
4. Seizures
5. Repeated vomiting
6. Double vision
7. Worsening headache
8. Cannot recognize people or disoriented to place
9. Behaves unusually or seems confused and irrital
10. Slurred speech
11. Unsteady on feet
12. Weakness or numbness in arms / legs

[c] **Treatment:**
1. Give educational sheet to all mTBI patients.
2. Headache management - use Acetominophen.
3. Avoid tramadol, narcotics, NSAID's, ASA, or other platelet inhibitors until CT confirmed negative

[d] **Exertional Testing Protocol**
1. 65-85% Target Heart Rate (THR = 220-age)
   -using push-up, step aerobic, treadmill, hand crank
2. Assess for symptoms (headache, vertigo, photophobia, balance, dizziness, nausea, tinnitis, visual changes, response to bright light or loud noise)

ICD-9 Codes
850.0 concussion w/o LOC
850.11 Concussion w/ LOC <30 min
850.12 Concussion w/ LOC 31-59 min
E979.2 Injury from terrorist

Clinical Management Guideline Mild Traumatic Brain Injury – Sub-Acute

Possible Sub-Acute mTBI (over 7 days post trauma)

High Risk Group:
1. Injury caused by explosion
2. Injury from fall, MVC, GSW above shoulders

Evaluation:
1. Administer Symptom and History Questionnaire – *Pg. 3*
2. Record history – previous trauma / current exposure
3. Perform Neuro Exam
4. Administer ANAM[a]
5. Identify Symptom Cluster(s) *[Headache, Balance, Sleep, Irritability, Memory]* – ***Pg. 2***
6. Perform additional Symptom Cluster assessments as indicated– ***Pg. 2***

Are Red Flags[b] Present?
- Yes → 1. Urgent CT Scan; 2. Referral (as indicated by symptom cluster); 3. Provide Education
- No →

Confirmed mTBI?[c]
- Yes → CT Scan Indicated[d]?
  - Yes → Order CT Scan → Positive CT Scan?
    - Yes → 1. Neurology Referral (24 hr); 2. Provide Education
    - No → Symptomatic?
      - Yes → 1. Manage symptom cluster– ***Pg. 2***; 2. Provide Education; 3. Profile – up to 3 months; 3. Periodic re-evaluation (e.g., every 3 months); 4. Determine final disposition at 12 months or sooner
      - No → **1. Provide Education 2. RTD**
  - No → Symptomatic? (see above)
- No → **1. Provide Education 2. RTD**

mTBI Disposition Decision

	Symptomatic	Disabling Symptoms
Resolving / Responding	**Retain**	**1. Gather collateral information: ANAM, time in service, unit & family feedback** **2. Ensure sufficient trial of OT/PT Rehab** **3. Consider MEB – 12 months**
No Change		**1. Consider MEB – 6 months with collateral information** **2. Initiate MEB – NLT 12 months**
Worsening		

[a] If ANAM is available

[b] **Red Flags:**
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2. Progressive declining neurological exam
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E979.2 Injury from terrorist explosion blast

[c] **Confirm mTBI:**
a. ***Injury Event*** *(**blast, fall, MVC, head impact**)*
AND
b. ***Alteration of Consciousness*** *(**dazed, confused or loss of consciousness even momentarily**)*

[d] **CT Scan Criteria:** CT Scan is indicated in mTBI patients with headache, vomiting, drug or alcohol intoxication, defecits in short term memory, physical evidence of trauma above the clavicle, dizzienss, dysequilibrium, or age >60.

Symptom Cluster	***Presenting Symptoms or Complaints – Assess frequency, severity, aggrevating factors***	***Special Assessments by Symptom Cluster***	***Assessment Red Flags***	***Treatments by Symptom Cluster***
Headache	Headache, sensitivity to bright light or loud noise, nausea, tinnitus, vision problems	**Examine**: fundascopic, pupils, visual acuity, extraocular, cerebellar/ coordination (e.g., finger to nose, rapid alternating movements), deep tendon reflexes (DTRs), gait, motor/sensory, trigger points (neck, greater occipital nerve) **REFER:** Any abnormality – 24 hours referral to Neurology **•ALL dosing and medications listed in this table are suggestions.** **•Inclusion in this guidance does NOT imply an FDA approved indication.** **•See full prescribing information for details of medication indications, contra-indications, dosing, side-effects, and cautions.**	Worse/ worsening / uncontrolled headache, fever, stiff neck, blackout, seizures **REFER:** Urgent referral to Neurology	**Preventive Treatment*:** *(guided by comorbid conditions):* **Insomnia:** tri-cyclic anti-depressants, e.g., Amitryptiline (Elavil) or Nortryptiline (Pamelor) – 10-25 mg QHS starting and increasing every 1-2 weeks prn up to 50-75 mg. **Hypertension**: consider Propanolol (Inderal) - 50 mg q day up to 180 mg q day or other beta blocker. **Neuropathic Pain:** consider Gabapentin (Neurontin): 300 mg BID up to 900 mg TID. **Regardless of selection of preventive therapy, should have trial of treatment of 4-6 weeks before considered ineffective.* **Symptomatic Treatment** (prn at HA onset, up to 3 days/week): Motrin 600-800 mg,; Naprosyn; Fiorinal/Fioricet; Triptans **Avoid:** Narcotics, Tylenol, Excedrin, Fioricet in patients with daily headache due to the risk of rebound headache. **REFER** to Neurology if patient fails trial of two preventive treatments.
Balance	Balance, dizziness, coordination problems, ringing in the ears	**Examine:** *Dix-Hallpike Maneuver, Romberg,* nystagmus, positional / postural balance, cerebellar/ coordination (e.g., finger to nose, rapid alternating movements), ENT – otoscopic exam, bedside hearing test, review audiogram if available. **REFER:** Any abnormality – 24 hours referral to Neurology	Lateral abnormality, nystagmus **REFER:** Urgent referral to Neurology	**REFER** to Physical Therapy
Sleep	Fatigue (physical and/or mental), sleeplessness, sleep disturbances, nightmares, sleep walking	Administer: *Epworth Sleepiness Scale* **History / Symptom questions**: difficulty falling asleep, difficulty staying asleep, acting out in sleep (sleep walking), nightmares, falling out of bed, confusion, frightened arousal, non-restorative sleep **Examine:** neck size, airway	Apnea **REFER:** Urgent referral to Neurology, Pulmonary Medicine, or other Sleep Lab.	**First Choice** – without other associated symptoms: 7-14 day trial of Trazodone (Desyrel) 25 - 125 mg qHS (response should be seen within 1-14 days). **Comorbid Conditions**: **Nightmares or other PTSD-related symptoms**: trial of Quetiapine (Seroquel) – dosage starting at 25 mg q hs tapered up to 100 mg over a period of one week (increase every 2 days if no improvement seen up to 100 mg; stabilize at 100 mg for one week before considering ineffective); **Headaches:** trial of Amitriptyline (Elavil) starting at 10 mg q hs and titrated up to doses of 75 – 100 mg if needed, complete trial of 6-8 weeks before considering ineffective. **REFER** to psychiatry if medication trials are ineffective.
Irritability	Anger, depression, anxiety, mood swings	**Administer:**, *PCL-M, Screening questionnaire, Beck's inventory* **Specific history / symptom questions:** physical fighting, alcohol intake, relationship problems, suicidal, homicidal **REFER:** Any abnormality – 24 hours referral to Psychiatry, Psychology, Social Work	Outward violence (not just arguing), physical fighting, alcohol intake, relationship problems, suicidal, homicidal. **REFER:** Urgent referral	6 week trial of SSRI / SNRI: **SSRI considerations:** Sertraline (Zoloft) 50 - 150 mg po q day; Citalopram (Celexa) 20-60m mg po q day; or Escitalopram (Lexapro) 10-40 mg po q day. **SNRI considerations:** Venlafaxine (Effexor XR)–start 37.5 mg q day and titrate by 37.5 mg/week up to 150 mg q day. **REFER** to Psychiatry if does not respond after 6 week trial.